Normal Practice 2 Continued:

6. Given $N(420, 3.4)$

Left cutpoint = 415

Right z-score = 1

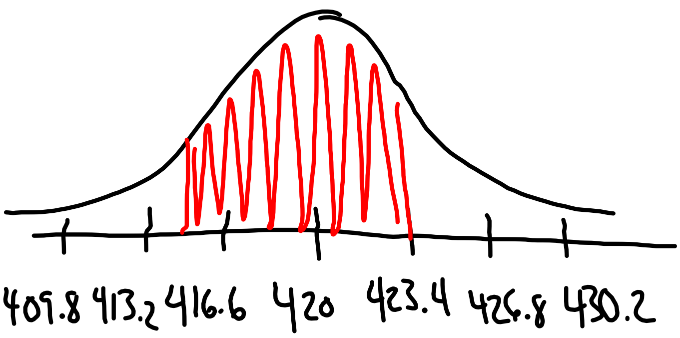
Left $z = \frac{y - \mu}{\sigma} = \frac{415 - 420}{3.4} = -1.47$

Right cutpoint:

$y = z\sigma + \mu$

$= (1)(420) + 3.4$

$= 423.4$



find percentage:

normalcdf$(-1.47, 1) = .77 = 77\%$

Example:

Given: Center 95%

Left cutpoint = 10

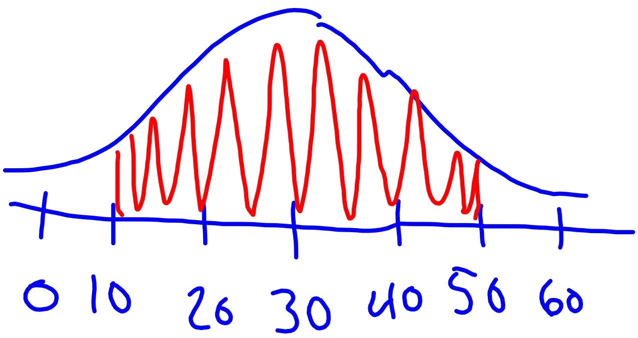
Right cutpoint = 50

Find: N(_ , _), scale, z-scores

Center 95% → $\pm 2\sigma$

$z_L = -2$ $c_L = 10$

$z_R = 2$ $c_R = 50$



$\mu = \dfrac{50+10}{2} = 30$ $\sigma = 10$

$N(30, 10)$

Example:

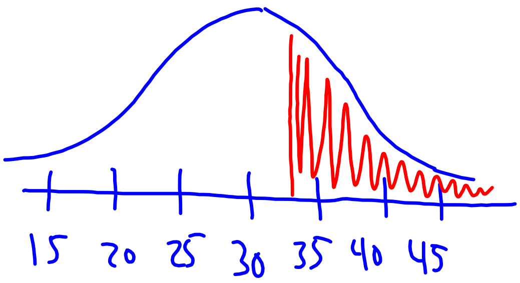
Given: Highest 25%

$N(30, 5)$

Find: Left and right cutpoints

Left and right z-scores

shading



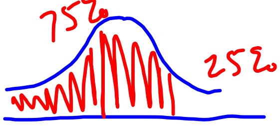
$C_R = +\infty$

$z_R = +\infty$

$z_L = \text{invNorm}(0.75) = 0.67$

always a decimal

* invNorm goes from $-\infty$ to a cutpoint



C_L: $y = z\sigma + \mu$

$= (0.67)(5) + 30$

$= 33.4$

Review:

Unimodal, symmetric distribution →

one peak, halves of distribution are mirror images of each other.

Standard Deviation →

measure of spread of data based on distance from the mean

Using the standard deviation as a ruler →

By measuring in standard deviations, we can compare values from distributions that have different scales

z - score →

measure of how many standard deviations value is from mean

$$z = \frac{y - \mu}{\sigma}$$ (for normal model)

Normal Model →

Useful model for describing unimodal, symmetrical distributions

68-95-99.7 Rule →

68 → $\pm 1\sigma$
95 → $\pm 2\sigma$
99.7 → $\pm 3\sigma$

percent of information

Calculator:

2nd VARS (DISTR) → 2: normalcdf(z_L, z_R)
answer is decimal

→ 3: invNorm(percent from left)
answer is z-score